Objectives: Chapter 34 The Biosphere: An Introduction to the Earth’s Diverse Environments

**Introduction**: Describe the unusual ecology of hydrothermal vent communities and how they were discovered.

***The Biosphere***

34.1 Define and distinguish among the different levels within ecosystems. Distinguish between biotic and abiotic components.

**Key Terms**: Organism, population, community, ecosystem, bioit components, abiotic components.

34.2 Define the biosphere, habitat

34.4 Describe the abiotic factors that influence life in the biosphere.

34.5 Why does the set of evoltionary adaptations characterizeing a species tend to limit the geographical distribution of that species?

*Web Activity* 34B Adaptations to biotic and abiotic factors: <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&50&02&34B%20Adaptations%20to%20Biotic%20and%20Abiotic%20Factors>

34.6 Explain how the input of solar energy and Earth’s movement through space influences global climate patterns. Explain how landforms affect local climate.

***Aquatic Biomes***

34.7 Describe the abiotic and biotic characteristics of the different ocean zones and adjacent aquatic biomes.

*Web Avtivity* 34C Aquatic Biomes: <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&50&03&34C%20Aquatic%20Biomes>

34.8 Describe the different types of freshwater biomes.

34.8 Explain how the properties of a river change from its source to its outlet and how this impacts the biotic components of this biome.

***Terrestrial Biomes***

34.9 Explain why species may appear similar in widely separated biomes.

*Web Activity* 34D Terrestrial Biomes: <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c7e&50&04&34D%20Terrestrial%20Biomes>

34.9 Explain how fire is a crucial factor in some biomes.

34.9–34.17 Describe the types of characteristics used to define terrestrial biomes. Then use these characteristics to define the major terrestrial biomes: tropical forests, savannas, deserts, chaparral, temperate grasslands, temperate forests, coniferous forests, and tundra.

34.18 Compare the impact of hurricanes and humans on tropical rain forests in Puerto Rico.

Objectives: Chapter 37 Communities and Ecosystems

**Introduction** Describe the interrelationships of the wasps that parasitize the cabbage white butterfly.

**Structural Features of Communities**

37.1 Describe the four properties of a community.

37.2 Define the concepts of interspecific competition, the competitive exclusion principle, resource partitioning, and a niche.

37.3 Define predation and describe the different strategies of predators and prey.

37.4 Define a keystone species, and describe two examples.

37.5 Explain why most plants have a variety of chemicals, spines, and thorns for defense against herbivores. Define coevolution and describe two examples.

37.6 Describe three types of symbiotic relationships, noting examples of each.

*Web Activity* 37A Interspecific Interactions: <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&53&01&37A%20Interspecific%20Interactions>

37.7 Explain how disturbances can be beneficial to a community. Distinguish between primary and secondary succession.

*Web Activity* 37B Primary Succession <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&53&03&37B%20Primary%20Succession>

37.8 Describe the roles of fire in shaping ecosystems.

37.9 Identify and compare the trophic levels of terrestrial and aquatic food chains.

37.10 Explain how food chains interconnect to form food webs.

*Web Activity*: 37 C Food Webs: <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&53&02&37C%20Food%20Webs>

**Ecosystem Structure and Dynamics**

37.11 Compare the movement of energy and chemicals in ecosystems.

MP3 Enery Flow and the Ecosystem: <http://wps.aw.com/bc_campbell_concepts_5/30/7923/2028411.cw/index.html>

*Web Activity:*  37 D Energy Flow and Chemical Cycling <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&54&02&37D%20Energy%20Flow%20and%20Chemical%20Cycling>

37.12 Compare the primary production of tropical rain forests, coral reefs, and open ocean. Explain why these differences exist.

37.13–37.14 Describe the movement of energy through a food chain. Explain why there are more producers than consumers and why eating meat is considered to be a great luxury.

*Web Activity*: 37E Energy Pyramids <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&54&01&37E%20Energy%20Pyramids>

37.15–37.18 Explain how water, carbon, and nitrogen, are cycled within ecosystems.

*BioFlix:* The Carbon Cycle <http://media.pearsoncmg.com/bc/bc_0media_bio/bioflix/bioflix.htm?cc5carbon_cycle>

*Web Activity:* 37 F The Carbon Cycle <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&54&03&37F%20The%20Carbon%20Cycle>

*Web Activity:* 37 G The Nitrogen Cycle <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&37&02&37G%20The%20Nitrogen%20Cycle>

*Web Activity:* 37 H Water Polution from Nitrates <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&54&05&37H%20Water%20Pollution%20from%20Nitrates>

**Ecosystem Alteration**

37.20 Describe what we have learned from the experiments at the Hubbard Brook Experimental Forest.

37.21 Define cultural eutrophication and explain how it is caused.

Chapter 36 Population Dynamics

Introduction Explain how starlings made it to North America and what has occurred since their introduction.

36.1 Define a population and describe several examples.

*BioFlix:* Population Ecology: <http://media.pearsoncmg.com/bc/bc_0media_bio/bioflix/bioflix.htm?cc5pop_ecology>

**Population Structure and Dynamics**

36.2 Define population density and describe techniques to measure it.

36.2 List the main types of dispersion patterns, and explain why each occurs.

*Web Activity*: 36A Techniques for Estimating Populations <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&52&01&36A%20Techniques%20for%20Estimating%20Population%20Density%20and%20Size>

36.3 Compare Type I, Type II, and Type III survivorship curves.

*Web Activity:* 36 B Investigating Survivorship curves; <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&52&02&36B%20Investigating%20Survivorship%20Curves>

36.4 Describe and compare the exponential growth model and the logistic growth model, illustrating both with examples. Explain the concept of carrying capacity.

36.5 Describe the factors that regulate growth in natural populations.

36.6 Define boom-and-bust cycles, explain why they occur, and note examples.

**The Human Population**

36.9 Explain how the human population is changing and the impact this has had and continues to have on Earth. Use the concept of an **ecological footprint** to compare the impacts of humans living in different countries.

*Web Activity:* 36 C Human Population Growth: <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&52&03&36C%20Human%20Population%20Growth>

36.10 Explain how the age structure of a population can be used to predict changes in population size and social conditions.

*Web Activity:* 36D Analyzing Age-Structure Diagrams: <http://media.pearsoncmg.com/bc/bc_campbell_concepts_5/media/assets/interactivemedia/activityshared/ActivityLoader.html?c6e&52&04&36D%20Analyzing%20Age-Structure%20Diagrams>